

## Case Study

# Weiss Technik implements car test chamber for VOC measurement according to DIN ISO 12219-1

### WHY

- New test standard for VOC emissions
- Tests on complete vehicles
- Complex testing requirements

### HOW

- Turnkey solution
- Customer-specific one-off production
- Test chamber in existing building

### WHAT

- 66.9 m<sup>3</sup> test chamber volume
- Test chamber made of polished stainless steel sheet
- Infrared irradiation system

### WHY | The Challenge.

The Fraunhofer Institute for Wood Research is investigating the impact of volatile organic compounds (VOCs) on air quality. For testing VOC emissions in car interiors, the institute requires a drive-in test chamber.

The test system must enable VOC emission testing in accordance with DIN ISO 12219-1. This requires emitters to simulate heat input for the 46-hour test cycle with high temperature stability.

The air conditioning system, the solar simulation emitters and all materials used in the test space must not influence the measurement of VOCs. Part of the test must be carried out with the engine running.

### HOW | The Idea.

To avoid influencing the VOC measurement, the chamber is made of particularly smooth stainless steel mirror sheet. No plastic, copper or silicone parts or components are used.

The temperature level, air volume and air velocity are precisely coordinated to ensure the required steady air flow, high temperature stability and prevention of condensation.

The air is guided horizontally through perforated plates with holes of different sizes in the chamber walls. The heat input from the sun is simulated using infrared emitters on the test space ceiling. The area exposed to infrared can be easily adjusted depending on the size of the vehicle.



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### WHAT | The Solution.

#### Drive-in climate test chamber EmissionEvent C/67'/+20/+40/VOC

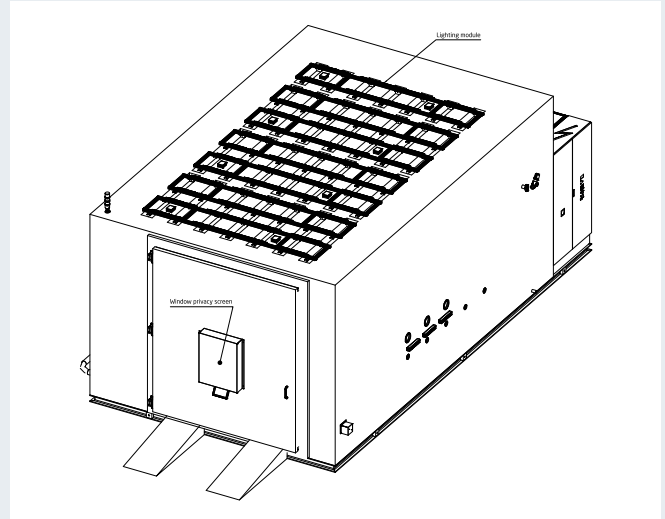
The test system measures 4,750 x 3,500 x 8,350 mm (W x H x D) and has a test chamber volume of 66.9 m<sup>3</sup>. The test chamber offers space for cars with up to nine seats and has two mobile ramps.

The temperature control and air conditioning equipment with stainless steel heat exchangers and air distribution system are installed in the test chamber. The machine unit and the control cabinet unit are located on a common base frame together with the test chamber.

Infrared radiators with highly uniform radiation characteristics are mounted on the test space ceiling to simulate solar heat. To prevent gas emissions from the steel influencing the test results, they are separated from the test chamber by a pane of special glass.

An exhaust gas extraction system has been provided for the test phase with the engine running; the exhaust gases are discharged to the outside.

The test chamber is controlled via the SIMPAC® digital measurement and control system and the tried-and-tested WEBSeason® software. Remote access via smartphone and tablet is straightforward.



#### Overview of turnkey services:

- Planning and construction of a drive-in car test chamber for VOC emission tests
- Overall concept
- Chamber construction
- Climate technology
- IR irradiation system for simulating solar heat
- Assembly and commissioning at the Weiss Technik facility, transport, and final commissioning at the customer's site



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